

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

Claims 1-13 are cancelled

14. (new): A robot control apparatus equipped with a pendant to be manipulated by a teacher, for controlling the operation of a robot on the basis of an operation command from the pendant, comprising:

a detecting device for detecting the position of the teacher;

a signal processing unit for receiving a signal from the detecting device to produce the position information of the teacher; and

a limited speed selecting unit for selecting the operating speed of the robot on the basis of the position information, wherein

the robot is controlled at the maximum operating speed selected by the limited speed selecting unit on the basis of the operation command from the pendant.

15. (new): A robot control apparatus according to claim 14, wherein

the operation of the robot is stopped by making the operation command to each the axis zero, or interrupting driving energy to the robot.

16. (new): A robot control apparatus equipped with a pendant to be manipulated by a teacher, for controlling the operation of a robot on the basis of an operation command from the pendant and a detected position in a position detector attached to each axis, comprising:

a robot position computing unit for computing the coordinate position of the robot on the basis of the detected position; and

a limited speed selecting unit for selecting the operating speed of the robot on the basis of an output from the robot position computing unit, wherein

the robot is controlled at the maximum operating speed selected by the limited speed selecting unit on the basis of the operation command from the pendant.

17. (new): The robot control apparatus according to claim 16, wherein the coordinate position data is a spatial position data at a tip of combined arms of the robot; and

the tip is a tip position of a tool whose tool size is known.

18. (new): The robot control apparatus according to claim 16, wherein the operation of the robot is stopped by making the operation command to each the axis zero, or interrupting driving energy to the robot.

19. (new): A robot control apparatus equipped with a pendant to be manipulated by a teacher, for controlling the operation of a robot on the basis of an operation command from the pendant and a detected position in a position detector attached to each axis, comprising:

a detecting device for detecting the position of the teacher;

a signal processing unit for receiving a signal from the detecting device to produce the position information of the teacher;

a robot position computing unit for computing the coordinate position of the robot on the basis of the detected position; and

a limited speed selecting unit for selecting the operating speed of the robot on the basis of outputs from the signal processing unit and the robot position computing unit, wherein the robot is controlled at the maximum operating speed selected by the limited speed selecting unit on the basis of the operation command from the pendant.

20. (new): The robot control apparatus according to claim 19, wherein the coordinate position data is a spatial position data at a tip of combined arms of the robot; and

the tip is a tip position of a tool whose tool size is known.

21. (new): The robot control apparatus according to claim 19, wherein

the operation of the robot is stopped by making the operation command to each the axis zero, or interrupting driving energy to the robot.

22. (new): The robot control apparatus equipped with a pendant to be manipulated by a teacher, for controlling the operation of a robot on the basis of an operation command from the pendant and a detected position by a position detector attached to each axis comprising:

an input unit for inputting a position monitoring signal for monitoring the position of the robot;

a position storage member for storing the detected position when the position monitoring is inputted;

a permitted value storage member for storing a prescribed permitted range of the operation of each the axis;

a position difference computing member for computing a position difference between the detected position and the detected position stored in the position storage member; and

a comparing member for comparing the position difference and the permitted range, wherein

while the position monitoring signal is inputted, if the position difference exceeds the permitted range as a result of comparison in the comparing member, the operation of the robot is stopped.

23. (new): The robot control apparatus according to claim 22, wherein

the robot is equipped with a teaching device, and the permitted range can be set by the teaching device or an external control device through a predetermined interface included in the robot control apparatus.

24. (new): The robot control apparatus according to claim 22, wherein

if the position difference exceeds the permitted range, abnormality display or warning

25. (new): The robot control apparatus according to claim 22, wherein it is provided with an output unit, and if the position difference exceeds the permitted range, abnormality display or warning display is outputted outside the robot control apparatus.

26. (new): The robot control apparatus according to claim 22, wherein the operation of the robot is stopped by making the operation command to each the axis zero, or interrupting driving energy to the robot.

27. (new): A robot control apparatus equipped with a pendant to be manipulated by a teacher, for controlling the operation of a robot on the basis of an operation command from the pendant and a detected position in a position detector attached to each axis, comprising

- an input unit for inputting a position monitoring signal for monitoring the position of the robot;
- a position storage member for storing the detected position when the position monitoring signal is inputted;
- a permitted value storage member for storing a prescribed permitted range of the operation of each the axis;
- a position difference computing member for computing a position difference between the detected position and the detected position stored in the position storage member; and
- a comparing member for comparing the position difference and the permitted range, wherein while the position monitoring signal is inputted, the detected position is stored after comparison has been made by the comparing member, and if the position difference exceeds the permitted range as a result of comparison in the comparing member, the operation of the robot is stopped.

28. (new): The robot control apparatus according to claim 27, wherein

the robot is equipped with a teaching device, and the permitted range can be set by the teaching device or an external control device through a predetermined interface included in the robot control apparatus.

29. (new): The robot control apparatus according to claim 27, wherein if the position difference exceeds the permitted range, abnormality display or warning display is made on the teaching device.

30. (new): The robot control apparatus according to claim 27, wherein it is provided with an output unit, and if the position difference exceeds the permitted range, abnormality display or warning display is outputted outside the robot control apparatus.

31. (new): The robot control apparatus according to claim 27, wherein the operation of the robot is stopped by making the operation command to each the axis zero, or interrupting driving energy to the robot.

32. (new): A robot control apparatus equipped with a pendant to be manipulated by a teacher, for controlling the operation of a robot on the basis of an operation command from the pendant and a detected position by a position detector attached to each axis, comprising:

a robot position computing unit for computing a position difference between the coordinate position of the robot on the basis of the detected position;

an input unit for inputting a position monitoring signal for monitoring the position of the robot;

a position storage member for storing the coordinate position when the position monitoring signal is inputted;

a permitted value storage member for storing a prescribed permitted range of the operation of each the axis;

a position difference computing member for computing the coordinate position and the coordinate position stored in the position storage member; and

a comparing member for comparing the position difference and the permitted range,

wherein

while the position monitoring signal is inputted, if the position difference exceeds the permitted range as a result of comparison in the comparing member, the operation of the robot is stopped.

33. (new): The robot control apparatus according to claim 32, wherein

the robot is equipped with a teaching device, and the permitted range can be set by the teaching device or an external control device through a predetermined interface included in the robot control apparatus.

34. (new): The robot control apparatus according to claim 32, wherein

if the position difference exceeds the permitted range, abnormality display or warning display is made on the teaching device.

35. (new): The robot control apparatus according to claim 32, wherein

it is provided with an output unit, and if the position difference exceeds the permitted range, abnormality display or warning display is outputted outside the robot control apparatus.

36. (new): The robot control apparatus according to claim 32, wherein

the coordinate position data is a spatial position data at a tip of combined arms of the robot; and

the tip is a tip position of a tool whose tool size is known.

37. (new): The robot control apparatus according to claim 32, wherein

the operation of the robot is stopped by making the operation command to each the axis zero, or interrupting driving energy to the robot.

38. (new): A robot control apparatus equipped with a pendant to be manipulated by a teacher, for controlling the operation of a robot on the basis of an operation command from the pendant and a detected position in a position detector attached to each axis, comprising:

 a robot position computing unit for computing the coordinate position of the robot on the basis of the detected position;

 an input unit for inputting a position monitoring signal for monitoring the position of the robot;

 a position storage member for storing the coordinate position when the position monitoring signal is inputted;

 a permitted value storage member for storing a prescribed permitted range of the operation of each the axis;

 a position difference computing member for computing a position difference between the coordinate position and the coordinate position stored in the position storage member; and

 a comparing member for comparing the position difference and the permitted range, wherein

 while the position monitoring signal is inputted, the coordinate position is stored after comparison has been made by the comparing member, and if the position difference exceeds the permitted range as a result of comparison in the comparing member, the operation of the robot is stopped.

39. (new): The robot control apparatus according to claim 38, wherein

 the robot is equipped with a teaching device, and the permitted range can be set by the teaching device or an external control device through a predetermined interface included in the robot control apparatus.

40. (new): The robot control apparatus according to claim 38, wherein

 if the position difference exceeds the permitted range, abnormality display or warning display is made on the teaching device.

41. (new): The robot control apparatus according to claim 38, wherein

it is provided with an output unit, and if the position difference exceeds the permitted range, abnormality display or warning display is outputted outside the robot control apparatus.

42. (new): The robot control apparatus according to claim 38, wherein

the coordinate position data is a spatial position data at a tip of combined arms of the robot; and

the tip is a tip position of a tool whose tool size is known.

43. (new): The robot control apparatus according to claim 38, wherein

the operation of the robot is stopped by making the operation command to each the axis zero, or interrupting driving energy to the robot.

44. (new): A robot system in which a plurality of robots are operated by a plurality of mans so as to permit the position or speed of each robot to be monitored by inputting a position monitoring signal through an input unit of a robot control device, wherein

inputting of the position monitoring signal identifies that another operator operating another robot has entered a predetermined region of a certain robot being operated by an operator, thereby monitoring the position or speed of the robot.